

REMARKS/ARGUMENTS

In this, the first Action in the case, the Examiner rejected claims 1, 2, 6, 12, 16(1), 16(2), 16(6), 16(12), 17(1), 17(2), 17(6), 17(12) and 18 under 35 U.S.C. §103(a) over ITU-T G. 729 Annex B (11/96) in view of Kwan, U.S. patent no. 6,504,838, both of record. This rejection is respectfully traversed.

The Examiner asserted that section B.3.4.2 of ITU-T discloses “determining a difference between a running averages (sic) of energy and the average energy of the current frame.” That is not exactly correct. That section discloses determining a difference (ΔE_f) between the current frame energy and the running average of the background noise energy. The Examiner further asserted that section B.3.5 of ITU-T discloses “in response to the difference either being exceeded by a first threshold value or exceeding a second threshold value greater than the first threshold value, indicating that the signal includes a voice signal (this can be interpreted as the absolute value of the difference is less than a threshold value, and equations 3-6 in section B.3.5 on page 6 read on this limitation).” The Examiner is again incorrect. Those equations merely indicate that if the difference (ΔE_f) is less than any one of three thresholds, then voice is deemed to be detected. This does not correspond to determining whether the difference is less than one threshold or greater than another, higher, threshold. Furthermore, if one were to convert applicant’s two difference comparisons into a single comparison of the absolute value of the difference against one threshold, then applicant’s comparison would indicate that voice is detected if the difference is greater than the threshold. This is the opposite of what ITU-T teaches: ITU-T requires the difference to be less than the threshold. Hence, a correspondence between the recitations of applicant’s claims and the teaching of ITU-T is lacking irrespective of whether actual or absolute values of the difference are considered.

It should therefore be evident that the Examiner's rejection of applicant's claims is based on a mischaracterization of the ITU-T reference, and hence that the rejection is unfounded.

The Examiner recognized that the ITU-T reference does not disclose the use of energy ratios in the difference determinations, but asserted that Kwan "teaches the ratio of energy above a first threshold frequency and energy below the first threshold frequency in the signal (col. 42, ln. 62-67)," and that it would be obvious "to modify ITU-T by incorporating the teaching of Kwan." The Examiner is correct that Kwan discloses a "twist" that is defined as the ratio of the power in the lower band and the power in the upper band. However, the Examiner is not correct that it would have been obvious to incorporate the teaching of Kwan into the ITU-T reference. Firstly, Kwan discloses the use of a voice-activity detector (VAD) within the context of the ITU-T reference, which Kwan incorporates by reference (col. 12, lines 8-19). Significantly, though, Kwan does not use the twist in the VAD. Since Kwan is not motivated to use the twist in the VAD within the context of the ITU-T reference, what makes the Examiner believe that anyone else would be motivated to do so? And, where does that motivation come from? The Examiner does not explain.

Secondly, Kwan uses the "twist" in a DTMF detector to identify DTMF signals within voice samples (see, col. 12, lines 20-22, col. 41, lines 59-66, and col. 42, line 64, to col. 43, line 2), and not to identify the presence of voice signals. The DTMF detector is a separate entity from the VAD (see Fig. 6). There is no disclosure, teaching, or suggestion in Kwan that – and if so, how – "twist" could be used to identify the presence of voice signals. Thus, no motivation exists for incorporating the "twist" ratio into ITU-T, which teaches a technique for detecting voice activity.

Thirdly, even if one were to use "twist" in ITU-T, the "twist" would presumably be used in the manner disclosed by Kwan – to identify DTMF signals – and not as a substitute for the energies used in the formulas

disclosed by ITU-T for detecting voice activity. There is no indication that such a substitution would give a useful result.

But even if, for some mysterious and undisclosed reason, one were to substitute the “twist” ratio for the energy measurements employed by ITU-T, one would still not arrive at the invention recited by applicant’s claims. Equations 3-6 in section B.3.5 of ITU-T teach determining if the energy difference falls below certain thresholds, as a way of determining the presence of voice activity. So presumably, the substitution proposed by the Examiner would change equations 3-6 to determining if the difference of the ratios falls below certain thresholds. But applicant’s claims recite that the ratio difference falling below a threshold as well as the ratio difference falling above a different, higher, threshold, both indicate presence of a voice signal. (Applicant has amended the independent claims to make this distinction even more emphatic.) There is simply no corresponding disclosure, teaching, or suggestion in the combined teachings of the two references.

In summary, in rejecting applicant’s claims, the Examiner has mischaracterized the teaching of ITU-T, has improperly combined the teaching of ITU-T with the teaching of Kwan, and even in the combination has failed to produce the invention claimed by applicant. Hence, the rejection is faulty and unsubstantiated, and as such should be withdrawn.

With respect to claim 2, the Examiner acknowledged that the combined references fail to disclose that the first threshold frequency is about 2400 Hz, but asserted that it would have been obvious, since “the energy of the voice signal is mostly concentrated (sic) in the region up to 2400 Hz. Therefore, it is necessary to choose this frequency threshold in order to increase detection reliabilities.” The Examiner’s assertion is unfounded. Voice contains substantial energy at frequencies above 2400 Hz, as illustrated in the enclosed reference. (Defining Analog Voice [Gateway Protocols] at p. 3, http://www.cisco.com/en/US/tech/tk1077/technologies_tech_note09186a0

[0800a70bf.shtml](#)) That reference also shows that the energy spectrum does not significantly change at around 2400 Hz to make it a “natural” breakpoint in the spectrum. It also shows that other frequencies, both lower and higher, would equally-well meet the Examiner’s assertion that “the energy of the voice signal is mostly concentrated in the region up to” that frequency. Thus, there is no motivation in the prior art to choose 2400 Hz as the threshold. That motivation only comes from applicant’s own disclosure and applicant’s own judicious choice of this frequency for an effective energy ratio comparison. So, the Examiner’s rejection of this claim improperly uses applicant’s own invention as prior art against him.

The Examiner next rejected claims 3-5, 13, 16(3)-16(5), 16(13), 17(3)-17(5), and 17(13) under 35 U.S.C. §103(a) over ITU-T in view of Kwan and further in view of Ashley, US patent no. 6,104,993, also of record, rejected claims 19-21 under 35 U.S.C. §103(a) over ITU-T in view of Kwan further in view of Benyassine et al., US patent no. 6,275,794, also of record, and rejected claims 7-11, 14-15, 16(7)-16(11), 16(14)-16(15), 17(7)-17(11) and 17(14)-17(15) under 35 U.S.C. §103(a) over ITU-T in view of Kwan, Ashley, and Benyassine et al. These rejections are also respectfully traversed.

The Examiner cited Ashley for disclosing the use of a high-pass filter to filter out noise energy. Benyassine et al. was cited for disclosing that average periodicity that falls below a threshold value indicates presence of voice signal. But these teachings do nothing to cure the fundamental failure of ITU-T and Kwan to disclose, teach, or suggest the invention of the base claims from which these rejected claims depend. Hence, the combined teachings of the references likewise fail to render these rejected claims unpatentable. For at least this reason, rejections of these claims also are unfounded and should be withdrawn.

Further with respect to claims 10 and 20, these claims require that both (a) the present total energy be lower than a threshold value and (b) that the average periodicity be lower than a threshold value, for a voice

signal to be detected. In contrast, neither ITU-T nor Benyassine et al., nor their combination, disclose, teach, or suggest that both tests must be met for a voice signal to be detected. Hence, these references cannot be said to render claims 10 and 20 unpatentable.

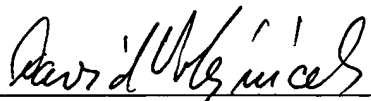
Applicant has also taken this opportunity to correct a typographic omission in the specification.

The Examiner's rejections having been properly responded to and overcome, applicant asserts that the application is now in condition for allowance. Applicant therefore requests that the application be reconsidered and thereafter be passed to issue.

Applicant considers the foregoing to be dispositive of all issues in the application, if, however, the Examiner deems that a telephone interview would advance prosecution, applicant requests the Examiner to call his attorney at the telephone number listed below.

Respectfully submitted,

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